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ABSTRACT

This multidisciplinary unit of study introduces the law of the sea to students in grades one through six. The unit, which takes three weeks to complete can be taught in science and social studies courses. Concepts taught include the following: there are many things in the sea that are of value to humankind; people need products from the sea; people need to share together the ocean's wealth; and man is part of the marine ecosystem. The unit involves the students in many activities. In one activity children work in small groups and cut pictures about the sea out of magazines. They create posters by pasting these pictures under headings: "Good Things About the Oceans," and "Bad Things About the Oceans." A classroom discussion follows. The students learn that oil comes from the ocean floor and that many things we use are made from fish or plant products. They also learn about pollution. In another activity, students examine maps of Africa which show landlocked countries. They are then asked to assign ocean areas equally to all of the African countries. They draw or color the maps to show how they solved the problem. In one part of the unit the teacher guides the class in experiments to see if vegetable seeds will grow in salt water. Children choose from several kinds of seeds and attempt to grow one in a cup of soil watered by fresh water and one in a cup watered by salt water. In other activities students take a field trip to a fish market, draw murals showing undersea life, read stories and poems about the sea, build models to show how oil is taken from the sea, produce a puppet show about the manganese nodule, and view films. (Author/RM)

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You and the Ocean

SP 013 202

1978

A Unit for Grades 1-6

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OCEAN EDUCATION PROJECT

oep

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YOU and the Ocean

A multidisciplinary unit of study introducing the Law of the Sea to elementary school children in grades 1 to 6.

CONCEPTS:

1. There are many things in the sea that are of value to humankind.
2. People need products from the sea.
3. People need to share together the ocean's wealth.

MARINE CONCEPTS:

4, Man is part of the marine ecosystem

4.1, The marine environment has affected the course of history and the development of human culture.

4.2, Man's activities may deplete and degrade mineral ecosystems.

4.21 Exploitation of marine and coastal environments can cause depletion of many marine species and degradation of habitats.

4.22 Man is changing marine ecosystems by adding pollutants to air and water.

4.3 Existing technology is capable of maintaining the health and usefulness of marine ecosystems.

4.32 Regional and international agreements will be essential for the conservation of marine resources.

Grade Level: 1-6

Subject: Science, Social Studies

Periods: Three weeks

Author: Ocean Education Project: Manring

* From Marine Environment Proposed Conceptual Scheme, 1973

This is a multidisciplinary unit for elementary school children designed to help them explore a particular problem of international living: the use of the ocean. Two levels of experience are developed: the academic and the social. The academic activities can be incorporated into the school curriculum. The questions raised provide the child with the opportunity to develop understandings about the ocean and its resources. The pursuit of these questions involves skills in reading, spelling, writing, map reading, classifying, science and mathematics. Experiences provided at the social level include group work, problem solving, making value judgments, and taking responsibility.

The unit is developed sequentially to guide the child's understanding from a definition of what the ocean is to an awareness of the problems humankind faces in using its resources. Teachers must adapt the lessons to the needs and abilities of their particular classes. The assumption has been made that the student will not have a clear idea of what the sea is. Therefore the unit begins with the question, "What is the ocean?" Other questions to be investigated are, "What is of value from the ocean to me and humankind?", "Who owns the ocean?" and "Me and the Sea: what is my responsibility?"

Why should elementary school children study the Law of the Sea? In ten years these children will be voters. Even now they are consumers. Possibly they will become stockholders. Some will be law makers. If the wealth of the ocean is to be available for future generations, the wise management of resources must begin now. No longer can citizens maintain a perspective limited by the confines of their national interests. What happens on this side of the globe is felt on the other. Tomorrow's citizens will have to make decisions not only about issues of life on this planet, but about the use of the moon and the space beyond. The Law of the Sea Conference is

initiating a plan whereby nations can jointly rule and jointly benefit from the ocean. Instead of repeating the conflicts created by the colonization of the land, we have the opportunity to share peacefully 70% of the earth's surface. The Law of the Sea can become a prorotype for responsible management of other global commons: Antarctica, the atmosphere, and outer space. We must educate our students to a global perspective.

WHAT IS THE OCEAN?

BEFORE BEGINNING THE UNIT: Teachers are advised to send a letter home describing the unit and its objectives to parents. This letter might include a brief description of the Law of the Sea, a list of the highlights of the study, the learning objectives, a booklist, and a sign-up sheet for volunteer help and resources.

Day 1. Objective: To enumerate all of the elements that are part of the ocean.
To produce a list of words to be referred to in future lessons.

Activity: The teacher will show a photo or single slide of the ocean and will play a record of "La Mer" by Debussy. The class will take several minutes to get into the mood; then the teacher will lead a brain-storming session in which children will suggest words that come to mind when the ocean is mentioned. The teacher will make a large chart of all of these words.

The teacher will introduce the unit to the class, explaining the activities that have been planned. The word list will be studied to see if more could be added. Children will be encouraged to find out more about the ocean.

At this time, it is appropriate to explain to the students that the term "ocean" will refer to all large bodies of water. Because they are, in fact, inter-dependent and inter-related, it is appropriate to speak of the oceans and seas as a unity.

Follow-up: The list that the class has composed will help the teacher to diagnose the understandings that children have so that plans can develop in a manner appropriate to the needs of the class. The words on the lists can become the raw material for spelling, sight word reading, and reference lists for creative writing. Words from the lists can be used to provide drill in alphabetizing, syllabification, and vowel work. Children can organize words from the lists beneath subheadings to develop classification skills.

Day 2. Objective: To expand the child's idea of what the ocean is.
To work cooperative in a group.
To produce a picture display for future reference.
To make value judgments about properties of the sea.

Activity: Children will work in small groups. They will cut pictures about the sea out of magazines. They will create posters by pasting these pictures under headings: "Good Things About the Oceans" and "Bad Things About the Oceans."

Follow-up: The teacher will display the posters and discuss with the class what they consider to be good and bad about the oceans. Children may need to be told at this point that oil comes from the ocean floor or that many things we use are made from

fish or plant products. Children may need to learn about pollution.

The teacher will want to discuss with the class the extent to which they were able to share in group work and how they made decisions about which pictures should go under each heading.

WHAT IS OF VALUE FROM THE SEA TO ME AND TO HUMANKIND?

Day 3 to 10 *During this time the class will be involved in projects to gain information about the living and non-living aspects of the ocean. The teacher will need to spend some class periods working with committees as well as giving whole group instruction about various aspects of the ocean. This is a time to plan for field trips to take places and for guest speakers to visit the class.*

The study of the ocean can be integrated into other classroom instruction in the following ways:

Music: Children can learn sea chanties from our country and others.

Art: Students can make a mural showing undersea life. They can draw still life using real shells or fish.

Math: The measures 12 and 3 miles are distances of territorial claims. Students develop a concept of how far that is by relating it to the size of the playground or the distance to a neighboring town.

Since equal divisions of time and materials are important aspects of sharing, this is a good time to teach division.

Chart and graph reading can be taught at this time.

Language Arts: The class as a whole can enjoy one of the many fine stories about the sea. Reading classes can read the stories and poems in their reader which tell about the ocean. Creative writing assignments can use the ocean as a theme.

Homework: To discover the extent of our dependency upon the ocean as a highway, have students inventory all the things in their homes that they can find that came fromabroad. Have them speculate as to which might have come by sea. Students could draw maps to show where different possessions were made and the route they might have traveled to get here.

Here is a game that will help students identify aspects of the ocean that are of value to them. It will also develop skills in listening to others and in taking turns.

Everyone sits in a circle. Each person in turn says what he or she likes most about the ocean. Only one person speaks at a time.

variation

Everyone sits in a circle. Each person tells what the two people before liked best, then adds his or her own preference.

WHAT IS OF VALUE FROM THE SEA TO ME AND TO HUMANKIND?

Topics for small group study

FISHING: Fishing in four different countries: Japan, USA, Russia, and Peru. (Teachers may want to substitute other countries to better integrate this unit with local social studies curriculum.)

Objectives: To discover what kinds of fish are eaten.
To discover what other uses people make of fish.
To identify what animals are endangered.
To describe methods of catching fish.
To prepare a report on this information to share with the class.

Activity: Committee members could survey a grocery store to find out what fish products are sold. They should look at oils and pet foods. If the school is located near the coast, children could visit a fish market.

Resources: *The Whalebook.* A conservation manual, Source Book, Teaching Tool, The Center for Action on Endangered Species, Inc., 175 West Main St., Ayer, MA 01432. Published by Whale Protection Fund, The Center for Environmental Education, Inc., 2101 L Street, N. W., Washington, DC 20037. This booklet has a list of teaching materials about endangered species and a list of products made from whale oil.

Fishing for Tuna, Lewis Allison, Melmont Publishing Co. Grades 4-6.

You and the Oceans, Diane Sherman, Children's Press.

"Dory Fisherman," National Geographic film.
"All the Fish in the Sea," film from Man Builds-Man Destroys series about Peru

Maps and pictures from National Oceanic and Atmospheric Administration (NOAA), Rockville MD 20852.
NOAA marine posters. Beautiful posters of fishes, mammals, mollusks. Government Printing Office, Washington DC 20402.

OIL: How and why we use oil from the sea.

Objectives: To discover how oil was formed under the sea.
To discover what use people make from oil.
To discover why we need oil from the ocean.
To discover what oil pollution is: what, where, and why oil spills.
To discover how we get oil from the ocean.
To discover where deep sea oil beds are and how they are found.
To prepare a report to share with the class.

Activity: Children might build models or make diagrams to show how oil is taken from the sea.

Children could practice letter writing by sending to oil companies for information.

Children could demonstrate for the class the effect of oil on water. Salad oil or machine oil could be used.

Children could bring in a sample of oil to show the class. Motor oil such as that which is used to lubricate cars would be appropriate.

Resources: *The Amoco Cadiz Oil Spill,* A Preliminary Scientific Report, U. S. Dept. of Commerce, available through U.S. Government Printing Office, Washington DC 20402. This gives a vivid report of the damages and clean-up attempts relating to the Amoco Cadiz spill in March, 1978.

Color pictures of the impact of the Amoco Cadiz oil spill showing damage to wild life and shore line. Environmental Research Laboratories, Boulder, CO 80302.

Mr. Otto W. Glade, Public Affairs Dept., EXXON Company, U.S.A., Post Office Box 2180, Houston TX 77001, for film, "A Funny Thing Happened on the Way to the Gas Station," and a poster about oil production.

Mr. Matthew F. Kane, Secretary's Dept., EXXON Corp., 1251 Avenue of the Americas, New York, NY 10020, for comic books about energy and two illustrated books about the industry.

MINERALS: The manganese nodule

Objectives:
To discover what the manganese nodule is.
To discover what cooper is and its uses.
To discover what iron is and its uses.
To discover what manganese is and its uses.
To discover what nickel is and its uses.
To understand that these minerals are important to the economies of many nations.
To discover that these minerals are not equally available around the globe.
To prepare a report to share with the class.

Activity: Students could make a display of samples of these materials by using products in which they are found: a penny, a nail, a pan made of steel.

Students could list all of the things in a room which are made of metals.

Students could produce a puppet show about the manganese nodule. Instruction for making the puppet and the script are included in this kit.

Resources: *The Sea Searchers: Men and Machines at the Bottom of the Sea,* Terry Shannon and Charles Payzant, Golden Gate Junior Books, 3d grade and up.

Mining the Wealth of the Ocean Deep, New York Times Magazine, July 17, 1977.

Romance of the Manganese Nodule, Ocean Education Project pamphlet, 100 Maryland Ave., N.E., Washington DC 20002. *(May be out of print)*

Topics for total class instruction

HARVESTING THE OCEAN'S PLANTS

Objective: To understand that sea plants can be used to help feed feed people.
To learn about uses of ocean plants.
To solve a problem.
To see a relationship between the classroom problem and a world-wide problem.

Activities: The teacher should teach the childrenabout the need for food in many countries around the world. The teacher should teach the children about the uses of seaweed as a food and as it is used commercially.

The teacher could pose this problem to the class to solve: "Suppose we have a committee here to prepare a sea food meal that would include fish and sea plants. Suppose we sell dishes to other students at a special sea food feast. Who should keep the money from the sale of the meal: the committee which prepared the meal, or the whole class, since we are all involved in the study of the ocean?

The class should answer the following questions:

1. The committee did all of the work. Does that mean they deserve the money?

2. The whole class is involved in the sea study. Shouldn't we all get some of the money?

3. Some children in the class have more money than others. Shouldn't the money be given to the ones who need it most?

4. The food came from the ocean. Are there places we could send the money where it would go to help the ocean? Does the money belong to the ocean?

After the class has dealt with these questions, the teacher will want to be sure that the students see how it relates to the problem of sharing the wealth of the ocean among nations.

Question 1 can be compared to the problem of whether the most technologically advanced nations should take the lion's share of the ocean's wealth.

Question 2 can be compared to the problem of distributing the wealth among all nations including the poor, the underindustrialized, and the landlocked.

Question 3 can be compared to the problem of meeting the needs of developing nations through the use of the ocean's resources.

Question 4 can be compared to the problem of pollution and endangered species.

Resources: *The Sea's Harvest*, Joseph E. Brown, Dodd Mead & Co., grades 6 to 9.

Questions about Oceans, Harold Dubach & Robert Taber, U. S. Government Printing Office, Washington DC 20402. 3d grade and up.

Ranger Rick Magazine, April 8, 1970.

Your local foreign food stores for products made from kelp and other sea plants.

OCEAN WATER

Objectives: To understand that ocean water is salty.
To understand that salty water is not suitable to all forms of life.
To understand that organisms too small to be seen live in ocean water.
To learn about desalination projects.
To be aware of a food chain.

Activities: The teacher should guide the class in experiments to see if vegetable seeds will grow in salt water. It would be best to obtain real ocean water. If this is not possible, adding salt to regular tap water will do. Children will choose from several kinds of seeds and attempt to grow one in a cup of soil watered by fresh water and one in a cup watered by salt water. Daily records should be kept to monitor results.

If real ocean water is available, a salt water aquarium could be set up. Sea water can be studied with the use of a projecting microscope. Salt water can be allowed to evaporate so that the salt residue can be seen.

WHO OWNS THE OCEAN?

Day 11 *When all the reports have been completed and information has been shared, it will be time to review the information. The teacher may want to give a quiz at this time to ascertain whether the children have a good grasp on the factual material. The class might add to the lists which were made at the beginning of the unit the new information they have gathered.*

At the end of the day the teacher should prepare the class for the study of the problems of the use of the sea. This can be done by asking what problems the class thinks are related to the ocean. It can be done by asking if gathering facts is all that is necessary in a study. Where do we go from here?

Day 12

Objective: To gain experience in sharing a common resource.
To participate in group problem-solving.
To see the relationship between a classroom experience and a global problem.

Activity: The teacher should begin the day by announcing that there is now a "Common Heritage" of pencils which will be available to everyone. It will be up to the teacher to direct the class in solving the problems that will arise from having this one supply of pencils available to everyone. Here are some questions that the class will need to explore and solve. This may be done individually in writing, in small group discussions, or in total class discussions:

If someone already has several pencils, should they take one from the "Common Heritage"?

If someone has old pencils and wants new ones, may they take them from the "Common Heritage"?

What will happen if we don't have rules about these pencils?

Who will "police" the pencil supply?

Should someone take more than one pencil at a time?

Should pencils be kept in people's desks or returned at the end of the day?

How shall we deal with people who take more than their share?

What is the student's responsibility if the pencil is broken or lost?

The term "Common Heritage" is used because that is what the Law of the Sea Conference has termed the ocean. In explaining the term to the class, the teacher can introduce the problems of international rights to the use of the ocean.

Resource: Rebus for children to read about the Law of the Sea (enclosed).
A Common Heritage, Filmstrip, Service Center, 7820 Reading Road, Cincinnati OH, 45237. Grades 4 and up.

Day 13

Objectives: To explore one of the problems relating to the use of the sea.
To work in a group.
To use a map.

Activity: Students will receive maps of Africa which show landlocked countries. They will be asked to assign ocean areas equally to all of the African countries. They can draw or color the maps to show how they solved the problem.

Follow-up: The teacher will want to explain that this is truly a problem of our world community and one being dealt with by the Law of the Sea Conference.

Resources: Map of Africa. Hayes Publishing Co. has duplicatable map booklets.

Day 14

Objectives: Same as for Day 13.

Activity: Children are to solve the problem of what they would do if they were the government of a landlocked country which was on unfriendly terms with the nations it needed to cross to get to the sea. Solutions to this problem could be acted out or drawn in cartoon style.

Day 15

Objectives: To review the problems related to the use of the ocean.
To work cooperatively with others.
To apply knowledge and understandings gained from the study.

Activities: To play games. The directions to games are included in this kit. Children can rotate around the room taking turns at each game. The teacher may want to order a copy of the Sea Hunt game from *Scholastic News Explorer*.

Resources: *Scholastic News Explorer*, April 13, 1978, Vol. 40, No. 24. When using this material it is important to clarify the statement on page 2, "They may decide: Who owns the sea and who can make laws about its resources. Laws may say: Beyond 200 miles, the seas are free. Anyone can mine minerals there." True, when you consider the water column beyond 200 miles, the "seas" will be free. But at the Law of the Sea Conference freedom of the international seabed is another question. The statement, "Anyone can mine the minerals there," must be qualified. Since 1970 the majority of nations, the United States among them, has accepted the international seabeds as subject to the Common Heritage of Mankind principle. By a future international Law of the Sea Treaty the seabeds will be managed internationally to benefit underdeveloped and developing nations. The extent of this international management remains one of the major negotiating issues at the Law of the Sea Conference.

Day 16

Objectives: To solve problems relating to the use of the sea.
To test each student's problem-solving ability.

Activity: Each child should complete each of the four cartoon worksheets on the problems involved in the Law of the Sea.

Resources: There are four worksheets in this kit.

Day 17

Objectives: To find out the progress of the Law of the Sea Conference.

Activity: A guest speaker or teacher lesson.

Resources: Brochures in this packet.
Recent news.

ME AND THE SEA: What is my responsibility?

To conclude the unit, the teacher should ask for a commitment to action from each child. Some may want to write letters to environmental protection groups. This might be a time when the class would want to educate others. A play or program for the whole school or an evening with parents might be the best conclusion for your particular class. Material for programs could come from the classroom activities that were a part of the unit.

VOCABULARY WORDS

resources
industry
fuel
energy
tide
manganese
nodule
landlocked
shipping
common heritage

COAST MATERIALS TO SUPPLEMENT THIS UNIT

305 The Ocean: Source of Nutrition for the Future

5 Language Arts Activities to Supplement Coast Learning Materials

104 Water for Fun

106 Teachers' Guide to Pagoo

109 The Not So Common Oyster

111 The Horseshoe Crab

112 Useful Plants of the Sea

113 Animal Behavior: Mud Snail Responses

115 Water, the Common Waste Recipient

201 The Blue Crab

215 Testing Water for Bacterial Pollution

214 The Moon, the Sun, and the Tides

AN EXPLANATION OF THE TOO MUCH GAME

The Too Much Game is designed to give the child an experience not in seeing how much he or she can take, but in being content to accumulate as little as possible. Players collect cards of varying value. At the end of the game the lowest score wins.

This game should stimulate discussion because the value of the cards, which represent resources from the sea, is left to chance. The cards are marked "tuna," "whales," "manganese nodules," "oil," and "sea ports." For each game the relative value of these cards depends upon how they fall when shuffled. Children may question why whales are more valuable than nodules if that happens to be the way they fall.

In playing the game, students will develop strategies for collecting the cards. They may guess that a particular card such as the nodule is most valuable and avoid collecting that. A player may decide that the best way to get a low score is to be diversified. Still another player may guess that a particular card is of little value and, after collecting all of those, find out that it was a high scorer.

Hopefully, the child will learn from this game that having a low score or having less is not so bad. The child will have an experience in deciding which element of the sea's wealth is most important to him or her.

FILMS

Who Owns the Sea
16 mm. film

Tony Partridge CBC
Foreign Relations and Export
354 Jarvis St.
Toronto, Ontario, CANADA

Law of the Sea
16 mm. film

United Nations film
Mrs. Daphne Brooke
Landis Distribution Official
Promotion and Distribution Section of
Radio and Visual Services
Office of Public Inforamtion
United Nations
New York, NY 10017

A Common Heritage
filmstrip

Service Center
7820 Reading Road
Cincinnati OH 45237
Cost $7.50

GAME AND ARTICLE

Scholastic News Explorer
902 Sylvan Ave.
Englewood Cliffs, NY 17632

Ask for reprint of article on Law of the Sea

AN EXPLANATION OF THE CARTOONS

The cartoons are designed to be used as an evaluative tool. They should be used at the end of the unit to give children an opportunity to apply the understandings they have gained. Each cartoon relates to a particular problem of the use of the sea: Cartoon A is about deep sea mining; B is about oil spills; C relates to landlocked countries; and D is about endangered species. Each cartoon presents a problem for the student to solve. The teacher should review the cartoon with the class to be sure that each child understands the topic before they begin drawing their own solutions. The work will be judged by the logic demonstrated and by the awareness of the global impact of the problem. For instance, the solution to the problem of the child getting the boat to sea across the chained-off land should involve some negotiation with the inhabitant of the land rather than having the child simply go around the chain.

A

Supermm Kid saves the Seas

Hi, I'm a manganese nodule

I can be found on the bottom of the ocean. All of us nodules have a dream ...

We all want to be peacemakers and make people more comfortable and happy.

You draw Super Kid helping the manganese nodules become **Peacemakers**

Directions for

Manny Manganese Nodule puppet

Materials: 1. black felt tip pen
2 paper pill cups
2 styrofoam bowls
1 piece colored paper
tape and glue

1. Cut a hole in one side of one bowl large enough to insert 4 fingers

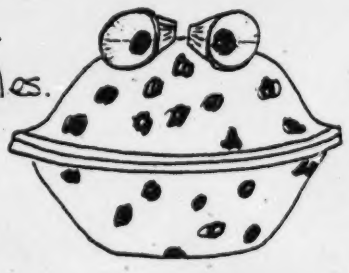
2. Cut a hole in one side of the other bowl large enough for a thumb

3. Cut two circles of colored paper large enough to cover the open surface of each bowl Attach colored paper to the bowls

4. Using the felt marker, make large dots on the outside of the two bowls.
5. Using the felt marker, make a large dot inside on the bottom of each pill cup. These will resemble the pupils of eyes.
6. Hinge the two bowls together.
7. Attach the pill cup eyes.
8. Put your hand in the holes.

to

Manipulate Manny

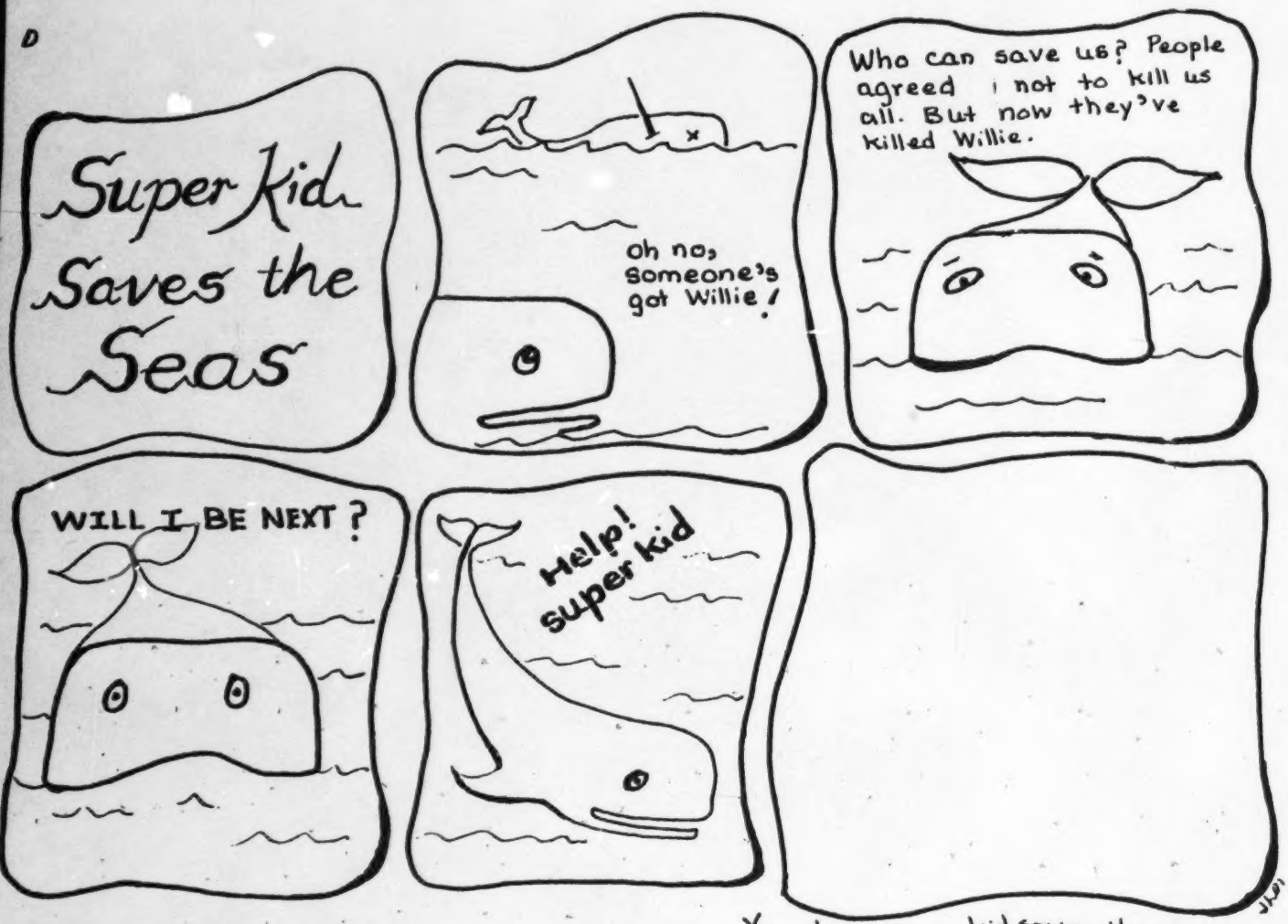


c

Another Case for Super Kid
This boat is almost finished
To the ocean
?
No Trespassing
No one may cross this land. You will have to pay a fine.
KEEP Out
Hey, how am I going to get across this land to the ocean? This is a case for Super Kid!

YOU draw Super Kid solving this problem.

D


Super Kid Saves the Seas
oh no, someone's got Willie!
Who can save us? People agreed not to kill us all. But now they've killed Willie.
WILL I BE NEXT?
Help! super kid

You draw Super kid saving the whales.

What is the Law of the Sea?

The ocean is **BIG**. There is much more water than land. In the there are lots of that are good for people to eat. There are manganese nodules that have minerals which help build things. There is oil in the. It can be used to heat our homes and to make our go. Plants from the are used for food and to make paint. Whales and dolphins are used for food and oil.

On the there are many who don't get enough to eat. Some countries aren't near the so hungry can't get and to eat. Some countries don't have minerals to make for people to use. They could get minerals from if they could use the. Some countries don't have enough.

Some are meeting at the **UN** to try to make a plan for sharing the. They want to be sure everyone gets enough and and enough and enough. They want to be sure all of the and are not killed. This plan is called **The Law of The Sea** have been working on it for **10** years.

DIRECTIONS FOR TOO MUCH GAME

MATERIALS:
28 cards assorted marked: whales, manganese nodules, oil, tuna and sea ports
see accompanying sheet

5 cards one each of whales, manganese nodules, oil, tuna and sea ports.
These cards are larger than the others.

OBJECTIVE OF THE GAME:
The player with the lowest score wins.

HOW TO PLAY:
At the beginning of the game the large cards are shuffled by one player. They are turned face down and set aside. They are not to be looked at until the end of the game.

Three or four players may play. Each takes one of the 28 playing card which have been placed face down in the center of the table. Players may keep the card they draw or pass it to the player on their right. That player must keep that card but may pass on another or draw from the pile. When all of the cards have been taken (or in the case of three players when each person has 9 cards) players stop to count up the score. The value of each card is determined by the order of the cards in the large card pile. For instance, if the five cards are in the order of oil, tuna, sea ports, whales and manganese nodules. Then oil equals one point and manganese nodules equals five. The player with the lowest score wins.

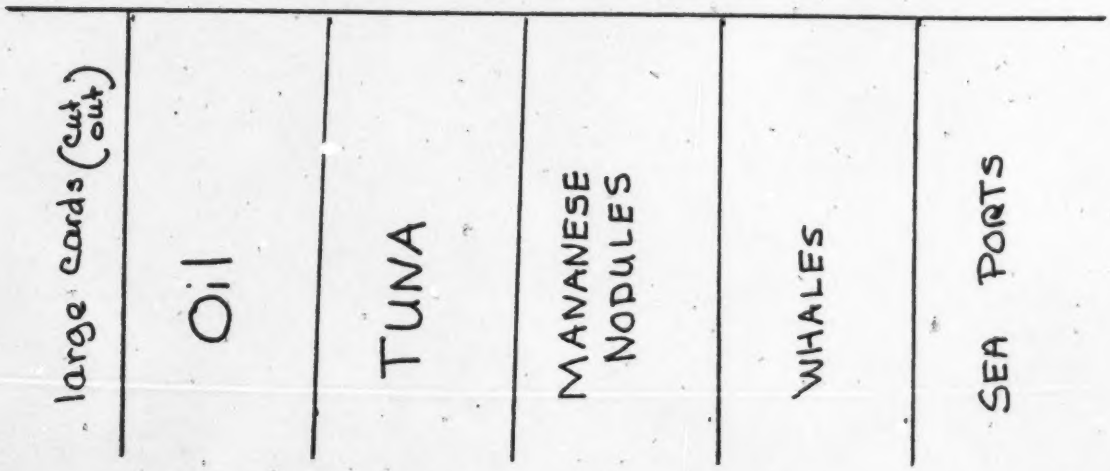
QUESTIONS TO ASK THE CLASS AT THE END OF THE GAME:

1, Do you agree that the values of the large cards should be as they fell? Arrange them in the order you think is best. Tell why.

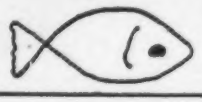
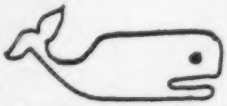
2, What strategies did you use to try to win?

3, How did you feel about taking something you didn't need?

4, Can you change the rules of the game so that everyone would win?



Cards for Too Much Game : cut out each card

TUNA 	TUNA	TUNA	WHALES
WHALES 	OIL	OIL	OIL
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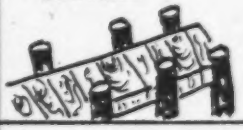
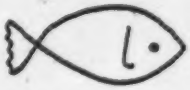
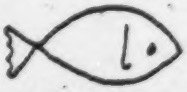
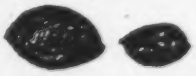
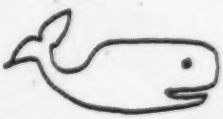
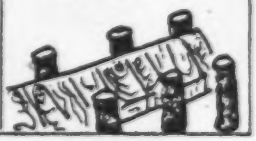
SEA PORTS	SEA PORTS	SEA PORTS 	WHALES
TUNA 	WHALES	OIL	OIL
TUNA 	MANGANESE NODULES	MANGANESE NODULES 	MANGANESE NODULES
OIL	OIL	WHALES 	SEA PORTS 

A PUZZLE FOR GROUP WORK

Teaching objective: To review facts and to provide an oportunity for group work. Children will work cooperatively to solve this puzzle.

Materials: pencil and paper (may be a ditto sheet) and books and maps to use as guides.

Number of players: groups up to six people.

objective: to fill in as many squares as possible in the grid.

Procedure: The teacher will distribute ditto sheets like the example below or will instruct the students to make their own. Children will use the books and map and their own memories to find words to fill the boxes.

The teacher will want to select the categories for the top of the puzzle that will be appropriate for that class to think about. The key word or words, which go down the side, may be chosen from words the teacher may wish to emphasize: cooperation, peace, ecology or to make it simple, to fill all the categories, the teacher may use random letters that stand for members of each category. The teacher should adapt the game so that it provides a reasonable challenge to the group and a good opportunity for cooperation.

EXAMPLE: partiaally completed.

categories: Key Word	Names of Fish	Minerals	Names of large bodies of water	Products from the ocean
O	oyster	oil		oil
C	clam		Caribbean	cat food
e	eel			
a	abalone		Atlantic	
n		nickel		
S	shark	silver		